Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims

1-39 (Canceled)

40. (Currently amended) A separating material formed by a process comprising the steps of:

a) providing a solid substrate having a substrate surface, wherein primary or secondary amines are coupled to the substrate surface; and

b) forming a graft polymer on the substrate by a process consisting essentially of the reaction steps of:

i) covalently coupling the primary or secondary amines with a thermally labile radical initiator and, subsequently,

ii) contacting the substrate surface with a solution of one or more polymerizable monomers, wherein thermally initiated graft copolymerization of the monomers forms a structure comprising adjacent functional polymer chains on the substrate surface.

41. (Previously Presented) The separating material of claim 40, wherein the step of covalently coupling the primary or secondary amines with a thermally labile radical initiator is followed by at least one washing or rinsing step prior to contacting the substrate surface with a solution of one or more polymerizable monomers.

42. (Previously Presented) The separating material of claim 40, wherein the solid substrate is a porous polymeric material having a pore size sufficiently large to allow passage of blood, blood plasma, or blood serum through the solid substrate.

43. (Previously Presented) The separating material of claim 40 or 42, wherein the solid substrate is selected from the group consisting of: a membrane, a particle bed, a fibre mat, and beads.

44. (Previously Presented) The separating material of claim 40, wherein the solid substrate comprises a biocompatible material.

45. (Previously Presented) The separating material of claim 40, wherein the solid substrate comprises a material selected from the group consisting of polyacrylates, polystyrene, polyethylene oxide, cellulose, cellulose derivatives, polyethersulfone (PES), polypropylene (PP), polysulfone (PSU), polymethylmethacrylate (PMMA), polycarbonate (PC), polyacrylonitrile (PAN), polyamide (PA), polytetrafluorethylene (PTFE), cellulose acetate (CA), regenerated cellulose, and blends or copolymers of the foregoing, or blends or copolymers with hydrophilizing polymers.

46. (Previously Presented) The separating material of claim 40, wherein the amino-functional groups are primary amino groups.

47. (Currently amended) The separating material of claim 40, wherein the thermally labile radical initiator which is covalently coupled comprises at least one carboxylic group.

48. (Currently amended) The separating material of claim 40, wherein the thermally labile radical initiator which is covalently coupled comprises compounds which decompose to give free radicals upon thermal activation selected from the group consisting of azo compounds and peroxides.

49. (Currently amended) The separating material of claim 40, wherein the thermally labile radical initiator which is covalently coupled is 4,4'-azobis-(4-cyanovaleric acid) or 2,2'-azobis-[N-(2-carboxyethyl)-2-methylpropionamidine].

50. (Previously Presented) The separating material of claim 40, wherein the polymerizable monomers are selected from the group consisting of compounds having a polymerizable double bond.

51. (Previously Presented) The separating material of claim 40, wherein the one or more polymerizable monomers are selected from the group consisting of:

acrylic acid, methacrylic acid, vinyl compounds, derivatives of acrylic acid, methacrylic acid and vinyl compounds, N,N-Dimethylaminoethyl acrylamide, N,N-Diethylaminoethyl acrylamide, N,N-Dimethylaminopropyl acrylamide (DMPA), N,N-Dimethylaminopropyl methacrylamide, N,N-Dimethylaminoethyl methacrylate, N,N-Diethylaminoethyl methacrylate, N,N-Dimethylaminoethyl acrylate, N-Morpholinoethyl acrylate, N-Morpholinoethyl methacrylate, 1-Vinylimidazole, Trimethylammoniumethyl acrylamide, Trimethylammoniumpropyl methacrylamide, Trimethylammoniumethyl

methacrylate, Glycidyl acrylate, Glycidyl methacrylate, Vinyl glycidyl ether, Vinyl glycidyl urethane, 2-Hydroxyethyl methacrylate, 2-Hydroxypropyl methacrylate, Hydroxymethyl methacrylate, N-Vinylpyrrolidone, 2-Vinyl pyridine, 4-Vinyl pyridine, and N-Vinyl-2-methylimidazole.

52. (Previously Presented) The separating material of claim 40, wherein the one or more polymerizable monomers comprise Dimethylaminopropyl acrylamide (DMPA).

53. (Previously Presented) The separating material of claim 40, wherein the one or more polymerizable monomers are selected from the group consisting of compounds of the following formula:

$$H_2C=C(R^1)\text{-}C(O)\text{-}X\text{-}R^2\text{-}N(R^3)_2,$$

wherein R^1 is hydrogen, methyl or ethyl group; R^2 is a C_1-C_6-alkyl or aryl group; R^3 is a methyl or ethyl group; and X is NH or O.

54. (Currently amended) A method for producing a separating material comprising the steps of:

a) providing a solid substrate having a substrate surface, wherein primary or secondary amines are coupled to the substrate surface; and

b) forming a graft polymer on the substrate by a process consisting essentially of the reaction steps of:

i) covalently coupling the primary or secondary amines with a thermally labile radical initiator and, subsequently,

ii) contacting the substrate surface with a solution of one or more polymerizable monomers, wherein thermally initiated graft copolymerization of the monomers forms a structure comprising adjacent functional polymer chains on the substrate surface.

55. (Previously Presented) The method of claim 54, wherein the solid substrate is a porous polymeric material having a pore size sufficiently large to allow passage of blood, blood plasma, or blood serum through the solid substrate.

56. (Previously Presented) The method of claim 54, wherein the solid substrate is selected from the group consisting of: a membrane, a particle bed, a fibre mat, and beads.

57. (Previously Presented) The method of claim 54, wherein the solid substrate comprises a biocompatible material.

58. (Previously Presented) The method of claim 54, wherein the solid substrate comprises a material selected from the group consisting of polyacrylates, polystyrene, polyethylene oxide, cellulose, cellulose derivatives, polyethersulfone (PES), polypropylene (PP), polysulfone (PSU), polymethylmethacrylate (PMMA), polycarbonate (PC), polyacrylonitrile (PAN), polyamide (PA), polytetrafluorethylene (PTFE), cellulose acetate (CA), regenerated cellulose, and blends or copolymers of the foregoing, or blends or copolymers with hydrophilizing polymers.

59. (Previously Presented) The method of claim 54, wherein the amino-functional groups are primary amino groups.

60. (Currently amended) The method of claim 54, wherein the thermally labile radical initiator which is covalently coupled comprises at least one carboxylic group.

61. (Currently amended) The method of claim 54, wherein the thermally labile radical initiator which is covalently coupled comprises compounds which decompose to give free radicals upon thermal activation selected from the group consisting of azo compounds and peroxides.

62. (Currently amended) The method of claim 54, wherein the thermally labile radical initiator which is covalently coupled is 4,4'-azobis-(4-cyanovaleric acid) or 2,2'-azobis-[N-(2-carboxyethyl)-2-methylpropionamide].

63. (Previously Presented) The method of claim 54, wherein the one or more polymerizable monomers are selected from compounds having a polymerizable double bond.

64. (Previously Presented) The method of claim 54, wherein the one or more polymerizable monomers are selected from the group consisting of:

acrylic acid, methacrylic acid, vinyl compounds, derivatives of acrylic acid, methacrylic acid and vinyl compounds, N,N-Dimethylaminoethyl acrylamide, N,N-Diethylaminoethyl acrylamide, N,N-Dimethylaminopropyl acrylamide (DMPA), N,N-Dimethylaminopropyl methacrylamide, N,N-Dimethylaminoethyl methacrylate, N,N-Diethylaminoethyl methacrylate, N,N-Dimethylaminoethyl acrylate, N-Morpholinoethyl acrylate, N-Morpholinoethyl methacrylate, 1-Vinylimidazole, Trimethylammoniumethyl acrylamide, Trimethylammoniumpropyl methacrylamide, Trimethylammoniumethyl

methacrylate, Glycidyl acrylate, Glycidyl methacrylate, Vinyl glycidyl ether, Vinyl glycidyl urethane, 2-Hydroxyethyl methacrylate, 2-Hydroxypropyl methacrylate, Hydroxymethyl methacrylate, N-Vinylpyrrolidone, 2-Vinyl pyridine, 4-Vinyl pyridine, and N-Vinyl-2-methylimidazole.

65. (Previously Presented) The method of claim 54, wherein the one or more polymerizable monomers comprise Dimethylaminopropyl acrylamide (DMPA).

66. (Previously Presented) The method of claim 54, wherein the one or more polymerizable monomers are selected from compounds of the following formula:

$$H_2C=C(R^1)\text{-}C(O)\text{-}X\text{-}R^2\text{-}N(R^3)_2,$$

wherein R^1 is hydrogen, methyl or ethyl group; R^2 is a C_1-C_6-alkyl or aryl group; R^3 is a methyl or ethyl group; and X is NH or O.

67. (Currently amended) A method ~~Use~~ of using a separating material of claim 40 for the extracorporeal treatment of blood, blood plasma or blood serum comprising:

extracorporeally separating the blood into the blood cells and the blood plasma or blood serum and contacting the blood plasma or blood serum with the separating material or passing the blood plasma or blood serum through the separating material; or

passing whole blood onto or by the membrane material.

68. (Currently amended) The method ~~use~~ of claim 67, wherein the method ~~use~~ is for the extracorporeal removal of endotoxins from blood, plasma or serum of septic patients.

69. (Currently amended) The ~~Use of a~~ separating material of claim 40, ~~wherein the use is~~ adapted for use in affinity adsorption, ion-exchange adsorption, hydrophobic adsorption, hydrophilic adsorption, or affinity adsorption applications.

70. (Previously Presented) A separating column comprising the separating material of claim 40, whereby the separating material comprises beads, said beads being packed into the separating column, and the beads having a size sufficient to provide a porosity allowing passage of blood cells through the separating column.

71. (Previously Presented) A separating cartridge, comprising a tube; and multiple hollow fibre membranes potted into the tube, said tube being fitted with ports, and the

hollow fibre membranes having a pore size sufficient to allow passage of blood plasma through the hollow fibre membranes, wherein the hollow fibre membranes comprise the separating material of claim 40.

72. (Previously Presented) The separating material of claim 43, wherein the solid substrate is a membrane, said membrane comprising a hollow fibre.

73. (Previously Presented) The separating material of claim 45, wherein the solid substrate comprises blends or copolymers of said compounds.

74. (Previously Presented) The separating material of claim 73, wherein the blends or copolymers of said compounds further comprise hydrophilizing polymers.

75. (Previously Presented) The separating material of claim 74, wherein the hydrophilizing polymer comprises polyvinylpyrollidone (PVP), or polyethyleneoxide (PEO).

76. (Previously Presented) The method of claim 56, wherein the solid substrate is a membrane, said membrane comprising a hollow fibre.

77. (Previously Presented) The method of claim 58, wherein the solid substrate comprises blends or copolymers of said materials.

78. (Previously Presented) The method of claim 77, wherein the blends or copolymers of said materials further comprise hydrophilizing polymers.

79. (Previously Presented) The method of claim 78, wherein the hydrophilizing polymer comprises polyvinylpyrollidone (PVP), or polyethyleneoxide (PEO).

80. (Previously Presented) A method for producing a separating material comprising the step of:

contacting the substrate surface of a solid substrate having a substrate surface, wherein primary or secondary amines are coupled to the substrate surface and a thermally labile radical initiator is covalently coupled to the primary or secondary amines,

with a solution of one or more polymerizable monomers, wherein thermally initiated graft copolymerization of the monomers forms a structure including adjacent functional polymer chains on the substrate surface.

81. (Previously Presented) The method of claim 80, wherein the solid substrate is a porous polymeric material having a pore size sufficiently large to allow passage of blood, blood plasma, or blood serum through the solid substrate.

82. (Previously Presented) The method of claim 80, wherein the solid substrate is selected from the group consisting of: a membrane, a particle bed, a fibre mat, and beads.

83. (Previously Presented) The method of claim 82, wherein the solid substrate is a membrane, said membrane comprising a hollow fibre.

84. (Previously Presented) The method of claim 80, wherein the solid substrate comprises a biocompatible material.

85. (Previously Presented) The method of claim 80, wherein the solid substrate comprises a material selected from the group consisting of polyacrylates, polystyrene, polyethylene oxide, cellulose, cellulose derivatives, polyethersulfone (PES), polypropylene (PP), polysulfone (PSU), polymethylmethacrylate (PMMA), polycarbonate (PC), polyacrylonitrile (PAN), polyamide (PA), polytetrafluorethylene (PTFE), cellulose acetate (CA), regenerated cellulose, and blends or copolymers of the foregoing, or blends or copolymers with hydrophilizing polymers.

86. (Previously Presented) The method of claim 85, wherein the solid substrate comprises blends or copolymers of said materials.

87. (Previously Presented) The method of claim 86, wherein the blends or copolymers of said materials further comprise hydrophilizing polymers.

88. (Previously Presented) The method of claim 87, wherein the hydrophilizing polymer comprises polyvinylpyrollidone (PVP), or polyethyleneoxide (PEO).

89. (Previously Presented) The method of claim 80, wherein the amino-functional groups are primary amino groups.

90. (Currently amended) The method of claim 80, wherein the thermally labile radical initiator which is covalently coupled comprises at least one carboxylic group.

91. (Currently amended) The method of claim 80, wherein the thermally labile radical initiator which is covalently coupled comprises compounds which decompose to give free radicals upon thermal activation selected from the group consisting of azo compounds and peroxides.

92. (Currently amended) The method of claim 80, wherein the thermally labile radical initiator which is covalently coupled is 4,4'-azobis-(4-cyanovaleric acid) or 2,2'-azobis-[N-(2-carboxyethyl)-2-methylpropionamide].

93. (Previously Presented) The method of claim 80, wherein the one or more polymerizable monomers are selected from compounds having a polymerizable double bond.

94. (Previously Presented) The method of claim 80, wherein the one or more polymerizable monomers are selected from the group consisting of:

acrylic acid, methacrylic acid, vinyl compounds, derivatives of acrylic acid, methacrylic acid and vinyl compounds, N,N-Dimethylaminoethyl acrylamide, N,N-Diethylaminoethyl acrylamide, N,N-Dimethylaminopropyl acrylamide (DMPA), N,N-Dimethylaminopropyl methacrylamide, N,N-Dimethylaminoethyl methacrylate, N,N-Diethylaminoethyl methacrylate, N,N-Dimethylaminoethyl acrylate, N-Morpholinoethyl acrylate, N-Morpholinoethyl methacrylate, 1-Vinylimidazole, Trimethylammoniumethyl acrylamide, Trimethylammoniumpropyl methacrylamide, Trimethylammoniumethyl methacrylate, Glycidyl acrylate, Glycidyl methacrylate, Vinyl glycidyl ether, Vinyl glycidyl urethane, 2-Hydroxyethyl methacrylate, 2-Hydroxypropyl methacrylate, Hydroxymethyl methacrylate, N-Vinylpyrrolidone, 2-Vinyl pyridine, 4-Vinyl pyridine, and N-Vinyl-2-methylimidazole.

95. (Previously Presented) The method of claim 80, wherein the one or more polymerizable monomers comprise Dimethylaminopropyl acrylamide (DMPA).

96. (Previously Presented) The method of claim 80, wherein the one or more polymerizable monomers are selected from compounds of the following formula:

$$H_2C=C(R^1)\text{-}C(O)\text{-}X\text{-}R^2\text{-}N(R^3)_2,$$

wherein R^1 is hydrogen, methyl or ethyl group; R^2 is a C_1-C_6-alkyl or aryl group; R^3 is a methyl or ethyl group; and X is NH or O.